

Examiners' Report/ Lead Examiner Feedback

January 2018

NQF BTEC Level 1/Level 2 Firsts in
Construction

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Introduction

This report has been written by the Lead Examiner for BTEC Construction and the Built Environment Unit 1 – Construction Technology. It is designed to help you understand how learners performed overall in the exam. For each question, there is a brief analysis of learner responses. You will also find some example learner responses at Level 2 Pass, Merit and Distinction. We hope this will help you to prepare your learners for future examination series.

Grade Boundaries

Introducing external assessment

The new suite of 'next generation' NQF BTECs now include an element of external assessment. The external assessments for NQF BTEC Construction are timetabled paper-based examinations.

What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade (Distinction, Merit, Pass and Level 1 fallback).

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark should be for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each test we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each test, because then it wouldn't take into account that a test might be slightly easier or more difficult than any other.

Grade boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link: <http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

Grade	Unclassified	Level 1 Pass	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Boundary Mark	0	8	19	30	41

General Comments

Overall, the paper produced a suitable range of responses. Lower ability learners often gave inaccurate or simplistic responses to questions and therefore gained limited marks. The more demanding questions provided learners with an opportunity to apply their knowledge in relation to construction scenarios and it was pleasing to see some extended answers that focused on the vocational context. In some cases, learners continued to provide responses which repeated information from the question stem or from previous question stems. In a number of other cases, candidates gave answers that appeared to reflect general knowledge rather than any detailed understanding of construction components or methods under consideration.

In preparation for future series, centres should focus on the analysis of the SAM (Sample Assessment Material) for this unit together with using this exam and its mark scheme as the basis for identifying and applying relevant more expansive solutions to the questions set. Learners should also be familiar with the full range of content from the unit specification and ought to be able to examine the application of these concepts in different scenarios. Learners should be able to sketch and label elements of construction as identified in the unit specification.

The ability to recognise the demands of a question is also important. Candidates should understand the different responses required for different command words, for example, identify, explain or discuss.

Question 1

This question was aimed at the understanding of the performance requirements required in buildings.

Targeted Specification Area: Learning Aim A.1

1a) Most learners were able to correctly identify at least one reason why lateral and vertical restraint are important in the design of buildings. More able learners identified both reasons correctly.

A – To resist the uplift from wind loading

C – To resist the spread of the walls

1b) Learners were required to name two fire resistant materials used in a building. The marking scheme indicates a wide range of suitable responses. Most learners were able to identify at least one fire resistant material correctly with more able learners able to correctly identify two correct responses.

Some learners incorrectly identified types of fire resistance methods such as fire extinguishers or compartments rather than fire resistant materials used in a building.

2 mark response example:

(b) Name **two** fire resistant materials used in a building.

(2)

1 Fire resistant paint

2 Plasterboard

(Total for Question 1 = 4 marks)

Further 2 mark response example:

(b) Name **two** fire resistant materials used in a building.

(2)

1 Block

2 Brick

(Total for Question 1 = 4 marks)

Question 2

This question was aimed at the understanding of how sub-structures are constructed.

Targeted Specification Area: Learning Aim B.1

2a) Most learners correctly identified the two features included on a scaled site layout plan.

B-Compounds

D-Welfare facilities

This was a well answered question.

2 b) Learners were required to identify two services that require protection during excavation works. Most learners correctly identified the correct answers of:

B – Gas

D – Electricity

Some learners incorrectly identified road as a service but this is not linked to a service which would need protection during the site-based preconstruction phase of a project.

2c) Learners were required to name two types of earthwork support. The marking scheme indicates a range of suitable responses.

- Steel trench sheets
- Timbering
- Hydraulic trench supports
- Aluminium walling
- Trench box

Some learners were able to name one type of earthwork support. Many learners found this question difficult and stated materials such as concrete and timber rather than specific types of earthwork support as identified in section B.2 Sub-structure groundworks section of the unit specification.

2 mark response example:

(c) Name two types of earthwork support.	(2)
1 <u>timbering</u>	
2 <u>trench sheets</u>	

1 mark response example:

(c) Name two types of earthwork support.	(2)
1 <u>steel Metal Sheet</u>	
2 <u>timber</u>	

1 mark awarded:

1 mark awarded for the response of steel metal sheet which is an acceptable equivalent response as steel trench sheets.

0 marks awarded for the response of timber as this is a material and not a type of earthwork support.

2d) Learners were required to name two types of foundation. The marking scheme indicates a range of suitable responses.

- Strip
- Trench/mass fill/Deep strip
- Raft
- Pile/short bored pile

Most learners were able to name at least one type of foundation.

2 mark response example:

(d) Name two types of foundation used in construction.	(2)
1 <u>Strip foundation</u>	
2 <u>trench foundation</u>	

Further 2 mark response example:

(d) Name **two** types of foundation used in construction.

(2)

1. raft foundation

2. deep strip foundation

2e) Learners were required to identify one risk associated with working in a confined space. The marking scheme indicates a range of suitable responses.

- Asphyxiation
- Fire
- Noxious fumes
- Reduced oxygen levels

Many learners were able to identify a suitable risk.

1 mark response example:

(e) Risk assessments need to be written before construction work starts.

Identify **one** risk associated with working in a confined space.

~~The~~ The confined space collapses (1)

(Total for Question 2 = 9 marks)

Further 1 mark response example:

(e) Risk assessments need to be written before construction work starts.

Identify **one** risk associated with working in a confined space.

(1)

There is a lack of oxygen means you can't breathe properly.

(Total for Question 2 = 9 marks)

Question 3

This question was aimed at the understanding of the performance requirements required in buildings.

Targeted Specification Area: Learning Aim A.1

Learners were required to explain one reason why an architect would consider a building's orientation in the design of a new office building.

The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a reason and 1 mark for a linked explanation of the stated reason.

Learners were able to achieve 1 mark for the identification of a reason but then often failed to understand the need to develop a linked explanation from it. This question was generally poorly answered by many learners. More able learners were often able to achieve 2 marks. Suitable linked correct responses may be seen in the marking scheme and include:

- Can reduce energy needs (1) as solar panel may be used to maximise solar gains(1)
- Can reduce the need to design for artificial light(1) as a building's orientation would maximise the use of natural daylight(1)

Acceptable 1 mark responses included:

- saves energy
- saves on heating bills
- gives you more light

Incorrect responses included:

- its cheaper

2 mark response example:

3 Explain **one** reason why an architect would consider a building's orientation in order to contribute to its sustainability.

If the building is facing South
the sun will be shining in the
house for most of the day this
means that you don't have to turn on
your lights.

(Total for Question 3 = 2 marks)

Further 2 mark response example:

3 Explain **one** reason why an architect would consider a building's orientation in order to contribute to its sustainability.

a reason why would be could be
to keep the house facing the sun so
the house could use the heat energy
rather than using inside heating.

(Total for Question 3 = 2 marks)

Question 4

This question was aimed at the understanding of the performance requirements required in buildings.

Targeted Specification Area: Learning Aim A.1

Learners were required to explain one why British Standards are used when specifying construction materials. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a reason and 1 mark for a linked explanation of the stated reason.

Learners were able to achieve 1 mark for the identification of a reason but then often failed to understand the need to develop a linked explanation from it. This question was generally poorly answered by many learners. More able learners were often able to achieve 2 marks. Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark responses included:

- ensure the correct materials are used
- to ensure the building is built safely
- to comply with legal requirements
- to ensure the building is strong enough to take loading

1 mark response example:

4 Explain **one** reason why British Standards are used when specifying construction materials.

To make sure buildings are safe

(Total for Question 4 = 2 marks)

1 mark awarded:

British standards have not been identified as specifications and performance standards, but, an acceptable reason for their use has been stated. 'To make sure buildings are safe' is an acceptable reason why British Standards are used. Please refer to the additional guidance for this item which lists a series of acceptable reasons for the use of British Standards.

Further 1 mark response example:

4 Explain **one** reason why British Standards are used when specifying construction materials.

This is ensure all the ~~con~~ materials that
going to be constructed are safe and
can resist any weathering or loads heavy
loads

(Total for Question 4 = 2 marks)

1 mark awarded:

British standards have not been identified as specifications and performance standards, but, an acceptable reason for their use has been stated. 'Ensure that all the materials that going to be constructed are safe...' is an acceptable reason why British Standards are used. Please refer to the additional guidance for this item which lists a series of acceptable reasons for the use of British Standards.

Question 5

This question was aimed at the substructure of ground floors.

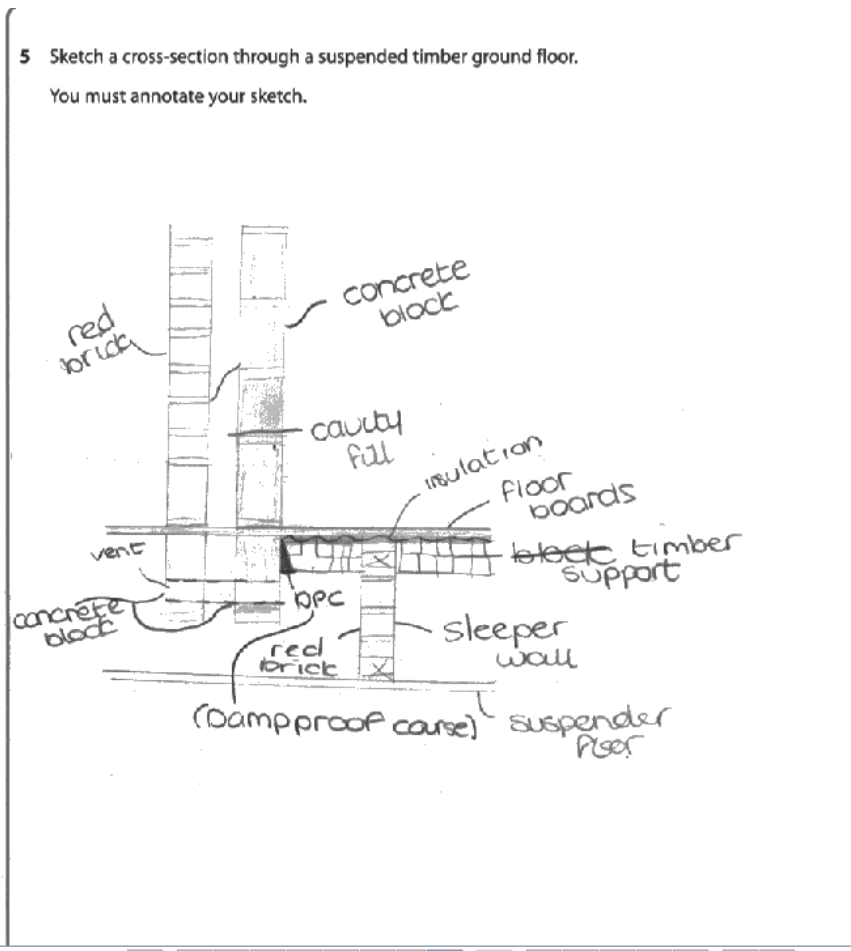
Targeted Specification Area: Learning Aim B.2

Learners were required to sketch a cross-section through a suspended timber ground floor.

In recent exam series, learner responses to sketch type questions had improved, however, in this examination series responses were often weak. Learners often either did not attempt a response or focused incorrectly on a past exam series detail such as that of a solid ground floor or strip foundation.

Centres should consult with the mark scheme to consider the detail required for a sketch question of this type. Centres also need to understand that this type of question will continue to be included in future examinations.

5 mark response example:



5 marks awarded: Although the detail is not quite an accurate sketch detail of a suspended timber ground floor, five components, sleeper wall, wall plate, dpc, insulation and floorboards are accepted.

Question 6

This question was aimed at the superstructure of roofs.

Targeted Specification Area: Learning Aim C.3

Learners were required to name the four types of roof shown.

This was satisfactorily attempted by most learners with many achieving at least 2 marks for parts (i) pitch roof and (iii) flat roof.

More able learners were often able to name 3 types of roof correctly.

The correct answers were:

- (i) Hipped
- (ii) Mono pitch
- (iii) Flat
- (iv) Lean-to

Question 7

This question was aimed at the understanding of the performance requirements required in buildings.

Targeted Specification Area: Learning Aim A.1

Learners were required to explain one reason why cellulose is a more sustainable form of insulation than foam. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a reason and 1 mark for a linked explanation of the stated reason.

Learners were able to achieve 1 mark for the identification of a reason but then often failed to understand the need to develop a linked explanation from it. This question was generally poorly answered by many learners. More able learners were often able to achieve 2 marks. Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark responses included:

- its a recycled material
- it requires less embedded energy to manufacture.

Incorrect responses included:

- cheaper,
- costs less
- quick/quicker, easy to construct
- it lasts longer

2 mark response example:

7 Explain **one** reason why cellulose is a more sustainable insulation material than foam.

it is made from recycled materials
therefore it is better for the environ-
-ment

(Total for Question 7 = 2 marks)

2 marks awarded:

The response states 'it is made from recycled materials therefore it is better for the environment'. This is an acceptable linked explanation. Please refer to bullet point 1 in the marking scheme.

1 mark response example:

7 Explain one reason why cellulose is a more sustainable insulation material than foam.

bec cellulose is more sustainable insulation because
it has been recycled from newspapers meaning that
it is cheaper than foam. It can also hold more
weight and is more fire resistant than foam

(Total for Question 7 = 2 marks)

1 mark awarded:

The response is related to cellulose being a recycled material. The identification mark is awarded but the linked explanation is not sufficient for the awarding of the second mark.

Question 8

This question was aimed at the superstructure of floors.

Targeted Specification Area: Learning Aim C.2

Learners were required to explain two disadvantages of why solid joists would not be used in new building designs. The command verb used for this question is explain, therefore 1 mark was allocated to the identification of a reason and 1 mark for a linked explanation of the stated reason.

Learners were able to achieve 1 mark for the identification of an advantage but then often failed to understand the need to develop a linked explanation from it. More able learners were often able to achieve 2 or 3 marks. Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark advantage responses included:

- moved less easier-heavy
- harder to accommodate services
- less sustainable
- more wastage

2 mark response example:

8 Engineered joists can be used instead of solid timber joists in new buildings.

Explain **two** disadvantages of solid timber joists compared to engineered joists.

1 They are more expensive as it is solid timber.

2 There is no room in the gaps for insulation. It takes longer to construct.

(Total for Question 8 = 4 marks)

2 marks awarded:

The first response 'they are more expensive as it is solid timber' is not an acceptable disadvantage of solid joists compared to engineered joists. This is a common incorrect response given by learners.

The second response is 'There is no room in the gaps for insulation. It takes longer to construct' are acceptable for two identification marks. Please refer to the additional guidance for this item.

Further 2 mark response example:

8 Engineered joists can be used instead of solid timber joists in new buildings.

Explain **two** disadvantages of solid timber joists compared to engineered joists.

1 one disadvantage is timber joists take up more time than Engineered joists.

2 Another disadvantage is solid timber joists is worse on the environment as there will be wasted.

(Total for Question 8 = 4 marks)

2 marks awarded:

The first response 'it takes up more time than an engineered joist' is acceptable for 1 mark. This is a poorly written response, in the learners own words, but can be linked to BP5 in the marking scheme.

The second response 'is worse on the environment as there will be wasted' is acceptable for 1 mark. This is again a poorly written response, in the learners own words, but can be linked to BP3 in the marking scheme and on-site wastage.

Question 9

This question was aimed at the superstructure of roofs.

Targeted Specification Area: Learning Aim C.3

Learners were required to explain two economic reasons why a pitched roof is generally a more favourable domestic dwelling choice of building design compared to a flat roof form.

Suitable linked correct responses may be seen in the marking scheme. The most common link response being:

- Allows no standing water or ponding which can cause maintenance/cost issues (1) as better water run-off due to pitch of roof (1)

Acceptable 1 mark advantage responses included:

- can put a loft in
- water run off is better so less ponding (maintenance)

Responses which were not awarded marks included:

- cheaper/costs less
- quicker/quick/fast
- its stronger
- its more sustainable

2 mark response example:

9 Explain **two** economic benefits of a pitched roof for a house compared to a flat roof.

1 Flat roofs gather rainwater possibly leading to leaks.

2 If the house has a pitched roof it provides extra space for things such as a bed room.

(Total for Question 9 = 4 marks)

3 marks awarded:

The first response is acceptable for 2 marks and is linked to pitch roofs allowance for no standing water or ponding and as a consequence this would lead to leaks. Please refer to bullet point 1 in the marking scheme.

The second response 'it provides extra space for things such as a bedroom' is acceptable for 1 mark. Please refer to bullet point 3 in the marking scheme. No suitable linked response has been clearly given.

2 mark response example:

9 Explain **two** economic benefits of a pitched roof for a house compared to a flat roof.

1 A pitched roof does not require as much maintenance compared to a flat roof. so it is cheaper to have.

2 A pitched roof could create another bedroom whereas a flat roof wouldn't.

(Total for Question 9 = 4 marks)

2 marks awarded:

The first response 'A pitched roof does not require as much maintenance compared to a flat roof' is an acceptable identification mark. Please refer to bullet point 1 in the marking scheme. No suitable linked response has been clearly given.

The second response 'a pitched roof could create another bedroom....' is acceptable for 1 mark. Please refer to bullet point 3 in the marking scheme. No suitable linked response has been given.

Question 10

This question was aimed at the superstructure of walls.

Targeted Specification Area: Learning Aim A.2/C.1

Most learners were able to identify **two** external finishes used in Structural Insulated Panels (SIPs). The correct answers were

C – Timber cladding

E – Brickwork

This was a well answered question.

Question 11

This question was aimed at the superstructure of wall.

Targeted Specification Area: Learning Aim C.1

Learners were required to explain two advantages of metal stud partitions compared to timber stud partitions.

Suitable linked correct responses may be seen in the marking scheme.

Acceptable 1 mark advantage responses included:

- fire resistant
- quicker/faster installation time
- stable
- easier to put in place
- durable

Responses which were not awarded marks included:

- will not rot
- last longer
- its stronger
- cheaper

1 mark response example:

11 Explain **two** advantages of metal stud partitions compared to timber stud partitions.

1 they are stronger so they can stay in place longer.

2 they are fire proof so they don't catch ^{the} fire if one p:braces are.

(Total for Question 11 = 4 marks)

1 mark awarded:

The first response 'they are stronger....' is worth no marks.

The second response 'they are fireproof' is acceptable for 1 mark. Please refer to the additional guidance for this item. No suitable linked response has been given.

0 mark response example:

11 Explain **two** advantages of metal stud partitions compared to timber stud partitions.

1 Metal studs last for longer as they
can't rot like wood can

2 ~~Metal~~ Metal studs are more resistant
~~and~~ and they can support more weight
before breaking off or deforming

(Total for Question 11 = 4 marks)

0 marks awarded:

The first response 'Metal studs last longer....' is not an acceptable advantage of metal studs compared to timber stud partitions.

The second response is not an acceptable advantage of metal studs compared to timber stud partitions.

Question 12

This question was aimed at structural forms of construction

Targeted Specification Area: Learning Aim A.2

Learners were required to discuss the advantages and disadvantages of each form of construction for the proposed residential development

Marks were awarded dependent on the detail of points identified and described and as to whether the learner had made a balanced discussion of both construction forms.

Most learners attempted this question. Many achieved some marks. Learner marks were mostly in mark band 1 or at the lower end of mark band 2. Some high mark band 2 and occasional mark band 3 learner work was also seen.

The marking scheme gives a detailed list of the advantages and disadvantages of each construction form. Some learners provided a balanced discussion of different structural forms, with sufficient detail, to achieve marks beyond those in mark band 2.

The mark bands and level descriptors are included in the mark scheme for question 11.

5 mark example response:

12 A developer is experiencing an increase in demand for affordable homes and rental accommodation. The developer intends to build a large residential estate and is considering two types of construction form:

- timber framed
- pre-cast concrete cross-wall.

Discuss the advantages and disadvantages of each construction form for the proposed residential development.

(8)

Both pre-cast concrete walls and timber frames are good. These are the advantages and disadvantages of each.

Advantages of timber frame is that it is sustainable, this is because timber is renewable and easy to get. Another advantage is that it has a lower embodied energy so it is better for the environment.

Disadvantages of timber frames are that public awareness around them is limited and more people will think it isn't as safe and durable as concrete cross-walls. Another disadvantage is that timber frames are a specialist build so they will cost more to build as labour charge will be high.

Advantages of concrete cross-walls are that they have been made for a long time and public awareness will be higher compared to timber frame.

Another advantage is that it requires less skilled labour so the costs will be lower. Also there are more people that know how to build concrete cross-walls so it will be easier to find a builder.

Disadvantages of concrete cross-walls are that they have a higher embodied energy than timber so they are worse for the environment. Another disadvantage would be it is not as sustainable as it is not renewable whereas timber is.

I would use pre-cast concrete cross-walls for an affordable residential building because costs will be cheaper so they can make it more affordable.

5 marks awarded:

Some points have been identified and described. Consideration of more than one viewpoint has taken place. Most points raised are relevant to the situation. The learner shows a good understanding of each construction form.

3 mark example response:

12 A developer is experiencing an increase in demand for affordable homes and rental accommodation. The developer intends to build a large residential estate and is considering two types of construction form:

- timber framed
- pre-cast concrete cross-wall.

Discuss the advantages and disadvantages of each construction form for the proposed residential development.

(8)

Buildings that are for residential purposes should be designed and made with aesthetically pleasing features as they will be people's homes.

~~Timber framed houses are cheaper than brick and block houses as they take~~

Timber framed houses have a quick installation time as it is putting big pre-cut timber pieces together. Also they can either have a clade or brick skin on the outside.

This could appeal to residents as they could have a say in what their home looks like.

Also they go up fairly quick and can sell quick meaning more money to build the other houses.

Although on the other hand, timber framed house can spread fire very quickly as timber doesn't take long until it sets a fire.

Pre-cast concrete cross wall house can be installed quickly as they are made in a factory and installed on site. It is good at resisting fire.

On the other hand concrete can look ugly to buyers and could even cost them more money.

To conclude timber framed houses would be better for residents as the residents can move it quicker, it has better aesthetics and can be more designed to customer needs than a ~~concrete~~ pre-cast concrete cross wall.

3 marks awarded:

A few key points have been discussed in superficial detail. The learner shows a basic understanding of each construction form.

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